AMENDMENTS TO THE SPECIFICATION

In the Specification

Please substitute the following amended paragraph(s) and/or section(s) (deleted matter is shown by strikethrough and added matter is shown by underlining):

At page 11, line 32 to page 12, line 8, please replace the paragraph with the following.

The use of exclusively gas phase reactants is somewhat limiting with respect to the types of precursor compounds that can be used conveniently. Thus, techniques have been developed to introduce aerosols containing reactant precursors into laser pyrolysis chambers. Improved aerosol delivery apparatuses for reaction systems are described further in commonly assigned and copending U.S. Patent Application Serial Number 09/188,670, now U.S. Patent 6,193,936 to Gardner et al., entitled "Reactant Delivery Apparatuses," filed November 9, 1998, incorporated herein by reference.

At page 18, line 32 to page 19, line 18, please replace the paragraph with the following.

Aerosol generator 182 can operate based on a variety of principles. For example, the aerosol can be produced with an ultrasonic nozzle, with an electrostatic spray system, with a pressure-flow or simplex atomizer, with an effervescent atomizer or with a gas atomizer where liquid is forced under significant pressure through a small orifice and fractured into particles by a colliding gas stream. Suitable ultrasonic nozzles can include piezoelectric transducers. Ultrasonic nozzles with piezoelectric transducers and suitable broadband ultrasonic generators are available from Sono-Tek Corporation, Milton, NY, such as model 8700-120. Suitable aerosol generators are described further in copending and commonly assigned, U.S. Patent Application Serial No.

09/188,670, now U.S. Patent 6,193,936 to Gardner et al., entitled "REACTANT DELIVERY APPARATUSES," incorporated herein by reference. Additional aerosol generators can be attached to junction 186 through other ports 192 such that additional aerosols can be generated in interior volume 188 for delivery into the reaction chamber.

At page 27, line 28 to page 28, line 8, please replace the paragraph with the following.

In one preferred embodiment of a commercial capacity laser pyrolysis apparatus, the reaction chamber is elongated along the light beam to provide for an increase in the throughput of reactants and products. The original design of the apparatus was based on the introduction of purely gaseous reactants. The embodiments described above for the delivery of aerosol reactants can be adapted for the elongated reaction chamber design. Additional embodiments for the introduction of an aerosol with one or more aerosol generators into an elongated reaction chamber is described in commonly assigned and copending U.S. Patent application serial No. 09/188,670, now U.S. Patent 6,193,936 to Gardner et al, entitled "Reactant Delivery Apparatuses," incorporated herein by reference.

At page 29, lines 9-28, please replace the paragraph with the following.

The improved reaction system includes a collection apparatus to remove the nanoparticles from the reactant stream. The collection system can be designed to collect particles in a batch mode with the collection of a large quantity of particles prior to terminating production. Alternatively, the collection system can be designed to run in a continuous production mode by switching between different particle collectors within the collection apparatus or by providing for removal of particles without exposing the collection system to the ambient atmosphere. [[An]] A preferred embodiment

of a collection apparatus for continuous particle production is described in copending and commonly assigned U.S. Patent application serial number 09/107,729, now U.S. Patent 6,270,732 to Gardner et al., entitled "Particle Collection Apparatus And Associated Methods," incorporated herein by reference. The collection apparatus can include curved components within the flow path similar to curved portion of the collection apparatus shown in Fig. 1.

At page 35, lines 13-29, please replace the paragraph with the following.

The conditions to convert crystalline VO_2 to orthorhombic V_2O_5 and 2-D crystalline V_2O_5, and amorphous V_2O_5 to orthorhombic V_2O_5 and 2-D crystalline V_2O_5 are described in copending and commonly assigned U.S. Patent application serial number 08/897,903, now U.S. Patent 5,989,514 to Bi et al, entitled "Processing of Vanadium Oxide Particles With Heat," incorporated herein by reference. Conditions for the removal of carbon coatings from metal oxide nanoparticles is described in U.S. Patent Application Serial No. 09/123,255, now U.S. Patent 6,387,531, entitled "Metal (Silicon) Oxide/Carbon Composite Particles," incorporated herein by reference. The incorporation of lithium from a lithium salt into metal oxide nanoparticles in a heat treatment process is described in copending and commonly assigned U.S. Patent Application Serial No. 09/311,506, now U.S. Patent 6,391,494, entitled "Metal Vanadium Oxide Particles," incorporated herein by reference.

At page 40, lines 6-12, please replace the paragraph with the following.

In particular, nanoscale manganese oxide particles have been formed. The production of these particles is described in copending and commonly assigned U.S. Patent Application Serial No. 09/188,770, now U.S. Patent 6,506,493 to Kumar et al., entitled "Metal Oxide Particles,"

incorporated herein by reference. This application describes the production of MnO, Mn_2O_3, Mn_3O_4 and Mn_5O_8.

At page 40, lines 13-31, please replace the paragraph with the following.

The production of silicon oxide nanoparticles is described in copending and commonly assigned U.S. Patent Application Serial Number 09/085,514, now U.S. Patent 6,726,990 to Kumar et al., entitled "Silicon Oxide Particles," incorporated herein by reference. This patent application describes the production of amorphous SiO_2. The production of titanium oxide nanoparticles and crystalline silicon dioxide nanoparticles is described in copending and commonly assigned, U.S. Patent Application Serial Number 09/123,255, now U.S. Patent 6,387,531 to Bi et al., entitled "Metal (Silicon) Oxide/Carbon Composites," incorporated herein by reference. In particular, this application describes the production of anatase and rutile TiO_2. The production of aluminum oxide nanoparticles is described in copending and commonly assigned, U.S. Patent Application Serial Number 09/136,483 to Kumar et al., entitled "Aluminum Oxide Particles," incorporated herein by reference. In particular, this application disclosed the production of γ-Al_2O_3.

At page 40, line 32 to page 41, line 8, please replace the paragraph with the following.

In addition, tin oxide nanoparticles have been produced by laser pyrolysis, as described in copending and commonly assigned U.S. Patent Application Serial No. 09/042,227, now U.S. Patent 6,200,674 to Kumar et al., entitled "Tin Oxide Particles," incorporated herein by reference. The production of zinc oxide nanoparticles is described in copending and commonly assigned U.S. Patent Application Serial Number 09/266,202 to Reitz, entitled "Zinc Oxide Particles," incorporated herein by reference. In particular, the production of ZnO nanoparticles is described.

At page 41, lines 9-22, please replace the paragraph with the following.

The production of iron, iron oxide and iron carbide is described in a publication by Bi et al., entitled "Nanocrystalline α-Fe, Fe_3C, and Fe_7C_3 produced by CO_2 laser pyrolysis," J. Mater. Res. Vol. 8, No. 7 1666-1674 (July 1993), incorporated herein by reference. The production of nanoparticles of silver metal is described in copending and commonly assigned U.S. Patent Application Serial Number 09/311,506, now U.S. Patent 6,391,494 to Reitz et al., entitled "Metal Vanadium Oxide Particles," incorporated herein by reference. Nanoscale carbon particles produced by laser pyrolysis is described in a reference by Bi et al., entitled "Nanoscale carbon blacks produced by CO_2 laser pyrolysis," J. Mater. Res. Vol. 10, No. 11, 2875-2884 (Nov. 1995), incorporated herein by reference.

At page 42, lines 5-22, please replace the paragraph with the following.

The production of ternary nanoparticles of aluminum silicate and aluminum titanate can be performed by laser pyrolysis following procedures similar to the production of silver vanadium oxide nanoparticles described in copending and commonly assigned U.S. Patent Application Serial Number 09/311,506, now U.S. Patent 6,391,494 to Reitz et al., entitled "Metal Vanadium Oxide Particles," incorporated herein by reference. Suitable precursors for the production of aluminum silicate include, for vapor delivery, a mixture of aluminum chloride ($AlCl_3$) and silicon tetrachloride ($SiCl_4$) and, for aerosol delivery, a mixture of tetra(N-butoxy) silane and aluminum isopropoxide ($Al(OCH(CH_3)_2)_3$). Similarly, suitable precursors for the production of aluminum titanate include, for aerosol delivery, a mixture of aluminum nitrate ($Al(NO_3)_3$) and titanium dioxide (TiO_2) powder dissolved in sulfuric acid or a mixture of aluminum isopropoxide and titanium isopropoxide ($Ti(OCH(CH_3)_2)_4$).

At page 46, line 21 to page 47, line 4, please replace the paragraph with the following.

Suitable abrasive particles include, for example, elemental metal, metal/silicon oxides, metal/silicon carbides, metal/silicon nitrides and metal/silicon sulfides with average diameters less than about 100 nm and more preferably from about 5 nm to about 50 nm. In particular, preferred abrasive particles include compounds such as Fe, Ag, SiO_2, SiC, SiN, ZnO, SnO_2, CeO_2, ZrO_2, MnO, Mn_2O_3, Mn_3O_4, MnO_2, Al_2O_3, TiO_2, Fe_2O_3, Fe_3O_4, Fe_3C, Fe_7C_3, MoS_2, MoO_2, WC, WO_3 and WS_2. Suitable abrasive particles are described further, for example, in copending and commonly assigned U.S. patent application serial No. 08/961,735, now U.S. Patent 6,290,735, entitled "Abrasive Particles for Surface Polishing," incorporated herein by reference, and in U.S. Patent 5,228,886 to Zipperian, "Mechanochemical Polishing Abrasive," incorporated herein by reference. Also, preferred abrasive particles have a narrow diameter distribution and an effective cut off of particle diameters.

At page 54, lines 12-20, please replace the paragraph with the following.

Silicon nitride particles were produced by laser pyrolysis. The laser pyrolysis was performed in an apparatus essentially as shown in Figs. 7 with the batch collection apparatus replaced with a continuous collection apparatus as described in copending and commonly assigned U.S. Patent Application Serial No. 09/107,729, now U.S. Patent 6,270,732 to Gardner et al., entitled "Particle Collection Apparatus And Associated Methods," incorporated herein by reference.